

DOCUMENT RESUME

ED 166 190

SP 013 862

AUTHOR Verhoeven, Ad F. M.
TITLE The Assessment of Teacher Effectiveness by the Pupils.
INSTITUTION Nijmegen Inst. for Education Research (NIVOR), (The Netherlands).
PUB DATE May 78
NOTE 10p.; Paper presented at the International Association for Educational Assessment (4th, Baden, Austria, May 22-25, 1978)
EDRS PRICE MF-\$0.83 HC-\$1.67 Plus Postage.
DESCRIPTORS Academic Achievement; Class Management; *Classroom Observation Techniques; Educational Research; Effective Teaching; Foreign Countries; *Interaction Process Analysis; Junior High School Students; *Student Characteristics; *Student Evaluation of Teacher Performance; Student Teacher Relationship; *Teaching Styles

ABSTRACT

A research program to investigate interactions of instruction styles and learner characteristics related to learning results in junior high schools is described. Data was gathered both by observation of the teacher in the classroom and by responses of pupils on their perceptions of the teacher. Different teaching styles are defined and referred to as functional teaching styles, because they deal with the functioning of the teacher in the teaching-learning situation. There are four phases to this research project: (1) determination of the teaching styles of about 100 junior high school teachers; (2) determining the pupil characteristics that are related to teaching styles; (3) determination of the criteria to which the interacting of teaching styles and pupil characteristics were compared, and (4) in the future, conducting the interaction project with a new group of teachers and pupils. The research is incomplete at this time, and only one hypothesis emerges as having strong support--in class settings a teacher who teaches by means of questions and giving feedback rather than by means of explaining and answering is more effective than average when the criterion is a cognitive one. (JD)

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ED166190

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Nijmegen Institute for Educational Research (NIVOR)
Bijleveldsingel 70
6524 AE Nijmegen
The Netherlands

THE ASSESSMENT OF
TEACHER EFFECTIVENESS
BY THE PUPILS

Ad F.M. Verhoeven

Paper presented at the fourth congress of the
International Association for Educational Assessment (IAEA).
Baden, Austria.
May 22-25, 1978.

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Introduction

A teacher is effective in as far as his pupils are able to learn optimally in those situations wherein they function together with the teacher.

Pupils' optimal learning depends only partly on the functioning of the teacher.

In some cases pupils learn better without a teacher. Not all learning situations are teaching-learning situations.

And further: also in those cases where teacher and pupil function together many of the learning results depend on general aptitude, learning style, personality and last but not least advance knowledge.

In the few minutes which I have to read my paper I will put much emphasis on the pupils as a source of information concerning the problem of teacher effectiveness. What is the value of the information given by pupils about the teacher; what is the theoretical significance of it; what is its practical worth?

My remarks are summary statements made after about five years of research in the field of teaching styles. The NIVOR research program in the field of teaching styles is not finished yet. Therefore I will present more plausible hypotheses than definitive results.

The NIVOR research program on teaching styles

You can place my remarks in better perspective if I spend a few minutes explaining the NIVOR research program on teaching styles.

The program is called: "Interactions of instruction styles and learner characteristics related to learning results in junior high schools".

The program started in 1968. It was designed by Hetteema (1972), who was the project leader until 1972, after which time I took over. This research program will be finished around 1982.

The research program on teaching styles was planned as a field study, designed as an Aptitude-Treatment Interaction (ATI) study (Cronbach & Snow, 1977; Plomp, 1977).

There are four phases:

1. Determination of the teaching styles of about 100 junior high school teachers (Hetteema, 1972).
2. Determining the pupil characteristics which are related to teaching styles.
3. Determination of the criteria to which the interacting of teaching styles and pupil characteristics will be compared.
4. The interaction project on a new group of teachers and pupils.

At this moment the data collection of phase 4 is nearly completed.

The team of three researchers, together with a staff of students and NIVOR-personnel, will start in August forthcoming with the study of the data of 75 teachers and 3500 pupils.

Consequently I am not yet able to relate the results of period four.

The research data which support my remarks are chosen from the results of the first phase. Later on, around 1980 I believe, a more complete overview of the project will be possible.

Teaching styles

In phase one the teaching styles of second grade Dutch havo-school teachers (comparable with junior high schools) were determined.

The measured teaching styles can be described as functional teaching styles, styles in teaching related to explaining, questioning, answering, giving feedback, organizing, moving, talking and gesturing on the part of the teacher in the classroom. The setting was one teacher in front of about twenty-five pupils, and then teaching English or mathematics.

These types of teaching styles are referred to as functional teaching styles, because they deal with the functioning of the teacher in the teaching-learning situation of the lessons, the micro-situation of structuring, stimulating, etc.

I will now try to explain the differences which were found among the about 100 teachers of the research in phase 1. From each of the teachers 4 lessons with fixed subject-matter were audio-visually recorded.

Afterwards explaining, questioning, moving, talking, etc. were analysed by about ten trained student-observers. We call this data observation data.

All of the pupils of the 204 participating classes responded to a 76-item questionnaire, containing questions concerning explaining, questioning, moving and the talking by their teacher. These responses we call description data.

I would like to discuss the relationship between observation and description data as the core of my paper. The relationships are interesting because:

1. the effect of teaching style will be measured as a pupil outcome; the pupil evaluation of the teacher is closer to the outcome than the observer evaluation.
2. information about the learners' description of the teacher is scarcely found in teaching theory.
3. I think that pupils can validate our observatory categories.

Which styles do we find in the NIVOR study? As in most of the studies, Hettrema found one fundamental contrast in the group of teachers: on the one hand 'pupil-centered' teachers, who followed the pupils in pace, structuring, level of subject matter treatment, and problem solving and working procedures; on the other hand the 'teacher-centered' or 'subject-matter-centered' teachers, who structure and lead the teaching-learning process themselves.

I do not like the words 'pupil- versus teacher-centered'. In functional teaching styles the contrast means essentially: individual- versus group-centered treatment of the subject-matter. Besides we cannot tell the teachers that they are not pupil-centered. We all know they are directed towards the pupils as well as is possible. Group-centered means that the teacher directs himself to 'an average pupil', because he knows what the pupil needs, he knows the subject-matter much better, he knows its structure, etc.

Hettrema uses the words heteronomous for individual-centered and autonomous for group-centered.

In our research we see the fundamental contrast heteronomous versus autonomous in two independent aspect:

1. the cognitive aspect ,
concerning structure, pace and level of subject-matter treatment;
2. the procedural aspect ,
concerning activities and ways of problem solving, etc.

fig. 1 about here

Combining these aspects, each with an individual-centered and group-centered pole, Hetteema has found four teaching styles.

1. cognitive individual-centered
procedural individual-centered
a stimulating coaching teacher
2. cognitive individual-centered
procedural group-centered
a stimulating leading teacher
3. cognitive group-centered
procedural individual-centered
a structuring coaching teacher
4. cognitive group-centered
procedural group-centered
a structuring leading teacher

Following a cluster analytic approach, 78% of the teachers fit into this categorical system. Only 40% of them can be described as fully heteronomous or autonomous (type one or four).

Observation and description

Now I will go on to the description data. Because of the limitations of the questionnaire one cannot expect as differentiated a classification of the teachers based upon questionnaire data as one based upon observation data.

I shall now discuss the average class scores of 85 teachers with complete observation and description scores.

Factor analysis of the description data yielded 8 orthogonally rotated factors. Each teacher had a score on each of the factors. They are:

1. Formal versus informal class climate.
On the one hand teachers with a restrictive, and on the other hand teachers with an integrative treatment.
2. Disorderly versus orderly subject-matter treatment.
It is possible to interpret the factor as poorly versus well goal-directed subject-matter treatment.
3. Nonstrict versus strict or personal- versus businesslike treatment.
4. Much versus little control or explicit group-centered control versus implicit individual-centered control.
5. Clear versus unclear or more versus less understandable treatment.
6. High versus low pace or quick versus delayed/retarded pace.
7. Teacher lets the class do the work versus does the work himself, is actively busy himself.
8. Supporting versus judging or democratic versus autocratic treatment.

This description made by about 4000 pupils is rather poor. A researcher would not be very content with it.

However these factors or characteristics of the teachers are the keys to understand the meaning of the observation factors and the bridge between teaching styles and effectiveness. And further: these characteristics are easily remeasurable and possibly usable by the teachers themselves in the classroom.

To find the significance of the observation data and the link between educational theory of teaching and effectiveness, we have searched for the relationship between observation and description data.

1. Factor 1: restrictive vs integrative class climate

No significant relationships with observation data.

2. Factor 2: poorly vs well goal-directed subject-matter treatment

In as far as the teacher uses the means 'questioning' and 'feedback' the lesson goes on more orderly. The goal-directed teacher is moving around more in front of the class. Both significant relationships concern the cognitive aspect of the teaching style. In summary: as seen by the pupils the stimulating teacher (i.e. the cognitive individual-centered teacher) is goal-directed concerning subject-matter treatment while the structuring (i.e. group-centered) teacher is not.

3. Factor 3: nonstrict vs strict subject-matter treatment

Here the teacher is more nonstrict when he uses the teaching means 'questioning' and 'feedback'. The cognitively individual-centered teacher is more nonstrict than the group-centered teacher. That also means more personal and less businesslike. The group-centered teacher has an opposite type of treatment.

4. Factor 4: much versus little control

No significant relationships with observation factors.

5. Factor 5: clear vs unclear teaching

The teacher with a stimulating, coaching style of teaching, i.e. the teacher who 'asks questions' and 'gives feedback', more than he 'explains' and 'answers', is called an understandable or clear teacher.

6. Factor 6: high vs low pace

No significant relationships with observation data.

7. Factor 7: teacher lets the class do the work vs teacher is actively busy himself.

The teacher who lets the class do the work makes more remarks on order and organisation than the teacher who is busy himself.

8. Factor 8: supporting vs judging treatment

No significant relationships with observation data.

Overview 1 about here.

Obviously the relationships of the description factors to the observation factors are not very differentiated. But the relationships found are very powerful, because they all point in the same direction.

The teacher who is individual-centered concerning pace, level and structure of subject-matter treatment, that is the teacher who asks questions, who gives feedback, who moves about, who does not explain and who does not answer his own questions is called:

- . goal-directed
- . clear, understandable
- . nonstrict or personal

The teacher who is group-centered concerning level, pace and structure of subject-matter treatment, that is the teacher who explains and answers his own questions, is called:

- .. poorly goal-directed
- . unclear or less understandable
- . strict or businesslike

Summary and discussion

There is strong support of the following hypothesis:

In class settings a teacher who teaches by means of questioning and giving feedback, rather than by means of explaining and answering, is more effective than average when the criterion is a cognitive one.

Within a group of 85 not specially trained junior high school teachers explaining and answering on the one hand and questioning and giving feedback on the other were typical teaching style characteristics.

These characteristics form the core of the cognitive dimension of 'individual vs group-centeredness' of the teachers.

Pupils evaluated this style dimension on the one hand as 'clear, goal-directed and nonstrict' and on the other hand as 'unclear, poorly goal-directed and strict'.

I think a teacher, who is called 'clear' concerning subject-matter treatment functions optimally with those pupils who describe him as a teacher with a clear way of teaching. That teacher is effective, I think, with the pupils who describe him as 'clear, etc.'.

Teachers who are individual-centered have been described as having a clear way of teaching by more than 50% of the pupils.

After some further research we will be able to measure teacher effectiveness by means of some simple audio-observation and description by the pupils. The effectiveness score can be thought of as a proportional score. But such a proportional score is not a general score, it is a situational score.

To finish my lecture, some remarks:

1. To get to the point I have slightly simplified my research outcomes. There are more teaching style aspects related to individual versus group-centeredness than mentioned above.
2. Neither the observation data nor the description data of the NIVOR research are collected for purposes of teacher training or teacher evaluation, but only for exposing the foundations of teacher differences.
3. The description data have a significant value for the teacher in every-day school practice. A computerized verbal feedback procedure has been developed by Verhoeven and Berghs (procedure DB2) as a service for the teachers in our research program.
4. In discussing teacher effectiveness there is the problem of the level of functioning of the teacher. One can think of three levels:
 - . level of functional activities of the teacher
 - . curriculum level
 - . school organisational levelIn the large Bennett-study (Bennett, 1976) for example, there is the suggestion that a certain approach of the curriculum level nullify the positive outcomes of the functional level.
5. I think we are able to assess the teacher effectiveness in
 - . the class teaching situation,
 - . with a cognitive criterion,
 - . in junior high schools,
 - . at the functional levelbut this is only one situation.
The problem for the researcher is: going on with further teacher effectiveness research in new and other situations, or directing the research to the learning situation of the pupils.
My choice is already made: search for interactions of learning and instruction to attain the criterion with all pupils. Teachers are replaceable.

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Note

Research supported by De Stichting voor Onderzoek van het Onderwijs (SVO)
The Hague, The Netherlands; grants 0111, 0208, 0256 and 0371.

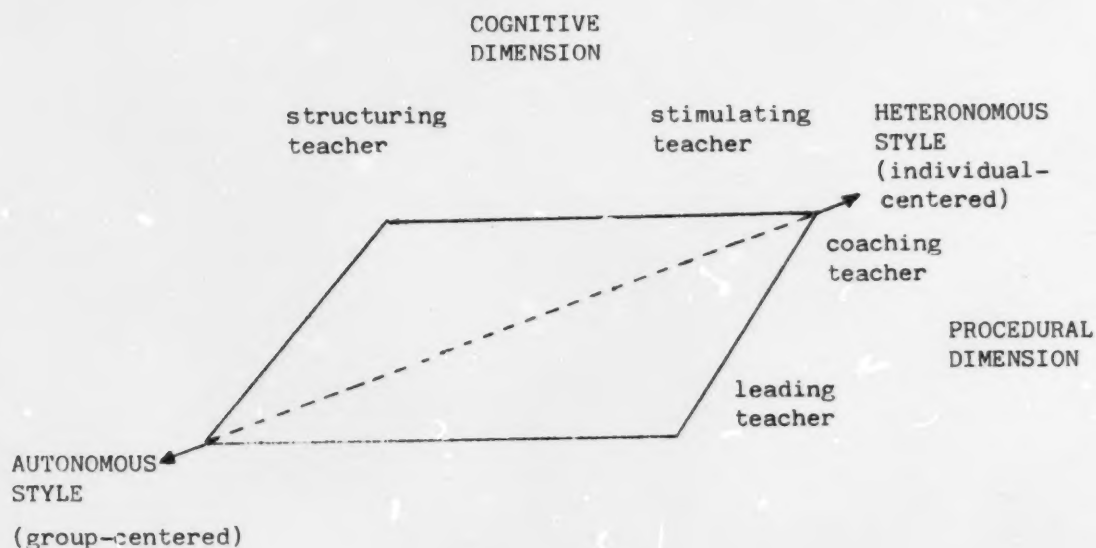


Fig. 1. Functional teaching styles
in a class teaching setting
(cfr. Verhoeven, 1977)

OVERVIEW 1

Overview of factors of the "Teacher Assessment Questionnaire" and relationships to functional teaching styles.
(cfr. Verhoeven, 1977)

+ = positive pole
- = negative pole

FACTORS + versus -	COGNITIVE DIMENSION <i>stimulating vs. structuring</i>	PROCEDURAL DIMENSION <i>coaching vs. leading</i>
1. restrictive versus integrative 2. poorly versus well goaldirected 3. nonstrict versus strict subject-matter treatment 4. explicit versus implicit control 5. clear versus unclear treatment 6. high versus low pace 7. class versus teacher activities 8. democratic versus autocratic attitude	- p < .01 + + p < .05 - + p < .01 -	 + p < .05 -